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Following Rules in the Intermontane West: 19th-Century Mormon Settlement

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The academic discipline of human geography is concerned with human activities, especially as these relate to physical landscapes and contribute to the modification of those landscapes. Although little attention has been paid to objectivist philosophies to inform human geography, behavior analysis might offer a useful explanatory model. As an example, a behavior analysis of selected aspects of 19th-century Mormon movement and settlement in the intermontane West is conducted. Mormons are a society of believers who practice cooperative effort and support for other members, and the Mormon church is governed by priesthood authority with members being called to perform tasks. This analysis employs the concepts of metacontingency, rule-governed behavior, and delayed reinforcement to analyze how Mormons settled the intermontane West.

Key words: metacontingency, rule-governed behavior, delayed reinforcement, Mormon settlement

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The focus of this research is the analysis of human behavior in landscape, a continuing concern of human geography, but one that has experienced limited conceptual advance within that discipline. Much past work in human geography emphasized landscape description, whereas most current work is informed by a variety of subjectivist philosophies, including poststructuralism and postmodernism, that focus on human experience in landscape rather than on explanations of behavior. The concern in this paper is to argue that human geography is a social science that can benefit from interpretation and application of the concepts and principles of behavior analysis as these are derived from the psychological tradition of radical behaviorism. As such, this paper is one response to pleas for increased links between behavior analysis and other disciplinary endeavors (Czubaroff, 1993; Glenn, 1993; Kunkel, 1996).

Following an introduction to the discipline of human geography, this paper conducts a behavior analysis of aspects of the process by which members of The Church of Jesus Christ of Latter-day Saints—commonly known as Mormons—settled in the North American intermontane West. The occupation of the intermontane West followed an essentially orderly sequence in accord with larger church concerns and ambitions. More so than most religious groups, Mormons emphasized cooperation, community, and the need for progress as means to establish and solidify their occupation of a region. These circumstances are capable of being accommodated in a theoretical framework based on the concepts and principles of behavior analysis, that is, on the traditional concepts of operant conditioning including the conditions preceding and the consequences following human behavior. This analysis also involves use of the concepts of metacontingency, rule-governed behavior, and delayed reinforcement. For human geographers, these concepts are laden with considerable social scientific baggage—specifically the objectivist philosophy of radical behaviorism—that is not typically favored in contemporary human geography.

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Particularly important in this analysis is the distinction between contingency-shaped and rule-governed behavior that became a major focus of behavior analysis in the 1970s following the introduction of the concept of rules by Skinner. Various agencies within a culture, such as governments and religions, may exercise control over individuals by "specifying the consequences of certain actions which in turn 'rule' behavior" (Skinner, 1953, p. 339). Thus, behavior analysts have the "tools to analyze and study the so-called higher mental processes" by focusing on "descriptions of contingencies and noting the effect on behavior directly" (Vaughan, 1989, p. 107). Use of the concept of rule-governed behavior means that there is no need to hypothesize internal events to explain how knowledge is transformed into action. The claim that behavior can be controlled through control of the environment, and that this can be done to improve the quality of human life, has generated much debate, especially concerning which behaviors are desirable. It is, however, an argument that Mormon leaders accepted, and their acceptance had significant impacts on aspects of 19th-century Mormon movement and settlement behavior.

THE STUDY OF HUMAN GEOGRAPHY

The study of geography, as a science concerned both with the physical surface of the earth and the activities of humans on that surface, has a long history, with major contributions being made by early Greek, Chinese, and Islamic civilizations and a consistent history of growth from the 15th century onwards in Europe. Throughout this prolonged period, the key concerns were those of mapping the known world and of writing descriptions of lands and peoples. In addition, there was a symbiotic link with exploratory activities. The 19th-century European experience paralleled that of the other emerging social sciences, with an increasing factual and conceptual base and a gradual recognition that geography was a legitimate university discipline. By the end of the 19th century, however, there was much uncertainty concerning the precise identity and content of the discipline: Martin and James (1993) noted the lack of a "professionally accepted paradigm to serve as a guide to the study of geography" (p. 164). Thus, there was an urgent need to answer the question: What is geography? The definition that proved most popular was that of geography as the descriptive study of regions, with regions defined as areas of the earth's surface that comprised a relatively uniform landscape.

By the mid 1950s, some human geographers were expressing concern regarding a perceived failure to keep pace with advances in other social sciences, especially as regards the absence of an explicitly scientific focus in the then-dominant regional approach. The response was to borrow heavily from other social sciences in the introduction and application of what became known as spatial analysis. This approach involved both description and explanation, was informed by theoretical ideas, and employed quantitative methods. There was a particular focus on answering the question: Why are things located where they are?

During the heyday of spatial analysis, many human geographers viewed their discipline as a social science concerned with some aspect of behavior, but with *behavior* being used as an umbrella term to refer to human activities in general rather than being defined operationally. Mikesell (1969) asserted, "Regardless of the tradition they follow or the methodology employed in the definition of their role, most human geographers have no hesitation in identifying themselves as social scientists" (p. 227). Similarly, Ginsburg (1970) noted that human geography is concerned with "questions of human behavior to the same degree, though not necessarily in the same way, that the

other social sciences are" (p. 293). Despite these claims from two influential human geographers, there was little evidence to suggest that behavior was indeed a core subject matter, as evidenced by the fact that a conceptually sophisticated approach to the analysis of behavior failed to appear. Indeed, an appraisal of surveys of 20th-century human geography confirms that the study of behavior is not a core subject matter (see Cloke, Philo, & Sadler, 1991; Johnston, 1996; Unwin, 1992). Similarly, the encyclopedic *Dictionary of Human Geography* (Johnston, Gregory, & Smith, 1994) includes only incidental references to behavior.

Interestingly, however, a subdiscipline known as behavioral geography rose to prominence in the late 1960s in association with the larger concern for a more scientific geography. This subdiscipline is characteristically seen, in retrospect, as an unfortunate episode that "had no time for humanism, and instead supposed that a narrowly conceived science could help us to learn everything we wanted to know about human activity in geographical space" (Cloke et al., 1991, p. 66). What many human geographers now perceive as the behaviorist excesses of the late 1960s were one aspect of the scientific human geography that declined in popularity by the 1970s; since then, human geographers have eschewed explicit discussion of human behavior.

The demise of spatial analysis and the failure of behavioral geography were related to changes that occurred in the other social sciences, especially the move away from objective analyses inspired by physical science towards a range of conceptual concerns that explicitly focused on human beings as subjects rather than objects. In short, spatial analysis was criticized by some human geographers for being dehumanizing. Hence, since about 1970, human geography has been a willing recipient of, and participant in, a wide range of concerns that in varying ways place humans at the center of analyses. The two principal philosophical approaches that embraced this emphasis after 1970 are Marxism and humanism, although, since about the early 1980s, at least three additional philosophical movements have been added to the conceptual repertoire of human geography—feminism, poststructuralism, and postmodernism.

Given the current disillusionment with objectivism among human geographers, it is unsurprising that there is little interest in behavior analysis as developed within psychology and as pursued by some practitioners in the other social sciences. Indeed, some human geographers are displaying only a limited concern with human behavior, focusing instead on matters of human identity and of landscape as symbol. This is despite the fact that a representative definition of human geography is that it is concerned with human activities generally, especially as these relate to physical landscapes and contribute to the modification of those landscapes. For many practitioners, the subject matter of human geography concerns the organization of "societies and the relationships between people and their environments" (Johnston et al., 1994, p. 262).

Although studying the relations between people and their environments has not employed a behavior-analytic approach—there have not been analyses in terms of contingencies—there has been some limited acceptance of behaviorist concepts by Golledge (1969), although these ideas were never pursued along radical behaviorist lines. In addition, the subdiscipline of cultural geography, which focuses on the evolution of the human landscape, accepted and employed a superorganic interpretation of culture, an interpretation that included the "behaviorist claim that habit should be construed not as thought but as activity" (Duncan, 1980, pp. 194–195). Even these limited excursions into behaviorist ideas were challenged by other human geographers, with objections to the "absorption of man into naturalistic explanation," because it involved a

"reduction of what it is to be human" (Ley, 1981, p. 213).

Within human geography, the principal perceived disadvantage to working within a behaviorist framework is that it ignores cognition and cannot cope with the complexities of behavior, resulting in a dehumanized human geography. Such criticisms are debated in other social sciences, especially since the introduction of the concept of rule-governed behavior, but in human geography these criticisms are largely unchallenged. Given the demonstrated relevance of behavior analysis in psychology and some other social sciences, it is appropriate to consider applications in human geography.

Accordingly, the current research follows Wagner (1994), who argued that human geographers need "a much deeper, clearer, more operational conception of human behavior and development" (p. 5). The central suggestion contained in this paper is that human geography can benefit from an interpretation and application of the concepts and principles of behavior analysis; it is a proposal to consider an approach that is conceptually well developed, that has received substantial empirical verification, and that is demonstrably useful in several social sciences. In this respect the analysis aims to contribute to the traditions pursued by Harris (1979) and Lamal (1991, 1997).

INTRODUCING THE ANALYSIS

The subject matter that follows is conventional human geography, being a concern with settlement and landscape change, but the analysis conducted is quite different from more typical human geographic analyses that tend to be either descriptive in focus, seeking to explain in only general terms, or concerned with achieving an empathetic understanding along the lines of humanistic psychology. As the preceding discussion noted, there have been few attempts by human geographers to accomplish scientific analyses of human behavior as that behavior relates to physical landscapes and contributes to modification of those landscapes. In the case of Mormon settlement in the intermontane West, much previous human geographic and other research has focused on the ideas emphasized in this work, but without reference to behavior analysis. From a behavior-analytic perspective, many questions arise about Mormon settlement. Most prominent is: Why did they settle and resettle in difficult semi-arid environments when more favorable environments were available?

Mormons and Mormonism

The Mormon church was established at Fayette, New York, in 1830, being founded on claims of contemporary revelation. According to Mormon practices, only the church president can receive revelation, and thus there is one and only one spokesperson for God; in an 1830 revelation, Joseph Smith was designated "a seer, . . . a prophet, an apostle of Jesus Christ" (*Doctrine and Covenants*, 1880, 21, p. 1). Recognizing Joseph Smith as a prophet, and recognizing the principle of prophetic leadership, are fundamental to an acceptance of Mormonism. The belief that Jesus restored his church through Joseph Smith, combined with practices such as polygamy, prompted persecution. The movements of the church, from Fayette, New York, to Kirtland, Ohio, to Far West, Missouri, to Nauvoo, Illinois, and to the Salt Lake area, are partially explained by the persecution suffered. Opposition to their beliefs and practices continued after the 1847 commitment to the intermontane West, as evidenced by an 1878 statement from a Presbyterian church minister:

> Mormonism is one of the most heathenish and anti-Christ-like frauds on the face of the earth. It destroys the majesty of the Godhead, robs Christ of his glory, substitutes wild fancies and wilder dreams for the infallible word of God, introduces misery into the family, and subverts the whole system of our Government. (quoted in Bender, 1996, p. 135)

The 1847 movement to the intermontane West was a movement to the promised land—the Mormon place. Brigham Young's words on first looking down on the Salt Lake Basin, "This is the place," are both a factual statement and a symbolic assertion. The primary motivation for church members moving west was not personal benefit, but shared participation in the foundation of Zion, a permanent home for Mormons. The move allowed the development of that home without experiencing conflict with others and with minimum non-Mormon influences.

The Mormon case is one of a relatively cohesive group moving to a new location in order to seek refuge, followed by a systematic and disciplined occupation of the surrounding area. The 1847 movement aimed to eliminate the various frictions that threatened the group at that time following the death of the founder, Joseph Smith; the occupation beyond the initial Salt Lake City settlement to other parts of the intermontane West included attempts to establish a distinct identity in landscape. Both the move and the subsequent 19th-century settlement were designed to facilitate the survival and strengthening of the group, with individual behavior being socially controlled.

Behavior Analysis of Mormon Settlement

The generally accepted characteristics of Mormon settlement in the intermontane West are accommodated in this behavior analysis, an analysis that involves four related tasks. First, the antecedent conditions are identified and described. These conditions include appropriate rules, and thus this task requires consideration of selected aspects of Mormonism. Second, the settlement behavior of Mormons is outlined. Third, some delayed consequences are identified. Fourth, some of the immediate contingencies that relate to the statement of rules, and some of the contingencies that relate to the following of rules, are uncovered. Expressed more succinctly, conducting a behavior analysis of Mormon settlement involves identifying the appropriate contingencies.

This task confronts two substantial challenges. First, analyses of operant behavior have typically been concerned with individuals rather than groups. However, there are several inspirations for employing a social scale. In psychology, there are a number of learning theories that deal with social behavior, and there is also an increasing body of empirical literature dealing with cultural practices and with metacontingencies (Glenn, 1988; Lamal, 1991, 1997). In sociology, Homans (1987) has long advocated a behavior analysis of societies, and Kunkel (1996, 1997) has shown that much work in social psychology is at least implicitly behaviorist. In anthropology, the cultural materialism of Harris (1979) is compatible with behavior analysis. Cultural materialist analyses of populations recognize an infrastructure that includes modes of production such as technologies of food production, modes of reproduction such as technologies of population change, a structure that organizes production and reproduction at both domestic and political social scales, and a superstructure that includes activities such as rituals and science. The key principle of infrastructural determinism claims the priority of infrastructural conditions and processes over their structural and superstructural equivalents.

Whereas behavioral psychology is concerned with the identification of the principles of individual behavior and talks about reinforcers and punishers, cultural materialism is concerned with group behavior and talks about benefits and costs (Malott, 1988). Both argue that behavior, as a response to environmental variables, either is accompanied by or precedes mental rationalizations as to the reasons for responses. In group analyses, the concept of individual operants is replaced by that of cul-

tural practices—group behavior—and the concept of contingencies is expanded to include metacontingencies. Behavioral contingencies explain the evolution and continuation of behavioral units, whereas metacontingencies explain the evolution and continuation of cultural units, units such as the Mormon church. "Metacontingencies are contingent relations between cultural practices and outcomes of those practices" (Glenn, 1991, p. 62). The argument in this analysis is that metacontingencies of group survival and progress provide a basis for grouping contingencies that operate at the individual level, as in the case of reinforcement for polygamy until the formal discontinuance of that practice in 1890. In this sense, Mormon religious practices can be considered a permaclone in that, although the individuals in the group change over time, there is a continuity to the cultural practices of the group until those practices no longer achieve a particular outcome (Glenn, 1991, p. 61).

The second challenge that this work faces concerns the precise identification of the behavior to be explained. Human geographers do not typically identify specific behaviors, preferring to focus more generally on broad categories of human activities such as migration, settlement, and agriculture. In addition to addressing behavior in these general terms, this analysis focuses on the specific behavior of the movement of Mormon settlers from one location to another as this behavior relates to the ambitions of church leaders.

The most important single argument in this analysis is that the relationship between individual behavior and some critical individual consequences was not immediate because it was mediated by the community as a whole, meaning that consequences were both delayed and distributed; thus, the basic control over behavior was that of deferred community well-being (Nevin, 1997, p. 229). Guerin (1998) developed this general argument in detail, noted that religion is "one form of cultural control to organize groups of people" (p. 58), and proposed general principles for shaping the behavior of religious groups.

The complex situations analyzed in this paper require consideration of the concepts of a permaclone, with the body of Mormon religious practices comprising a permaclone; of metacontingency, which is a set of antecedent conditions, behaviors (cultural practices), and consequences; of rule-governed behavior, which is behavior that involved the church leadership exercising control over individual members; and of delayed consequences. These concepts are employed because simpler concepts are insufficient. Nevertheless, the basic principles of the analysis are consistent with simpler behavior-analytic concepts. Rules function as discriminative stimuli or function-altering stimuli, and thus their function is derived from such basic concepts as reinforcement.

RULE-GOVERNED BEHAVIOR

Much behavior involves delayed outcomes that do not function as behavioral consequences for the acts that produce them. Indeed, control by rules is critical if humans are to function effectively in environments that involve delayed consequences. With reference to early agriculture, Malott (1989) noted that the "delay between intentional planting and harvesting almost insures a need for the behavior of planting to be under the control of delayed outcomes" (p. 282). Humans often act to optimize these delayed outcomes by following rules or instructions that specify the outcomes of their actions. In these instances, "it is not the delayed outcomes but rather the rules stating those delayed outcomes that more directly control the actions" (p. 283). In this sense, rules are part of the antecedent conditions and are essentially the existing body of knowledge or beliefs. They may be called cultural baggage, may involve preadaptation,

and may involve an existing infrastructure.

Rules are both stated and followed. Regarding rule stating, Reese and Fremouw (1984, p. 870) distinguished between descriptive or normal rules (such as principles or laws of nature that do not state a specific behavior for the listener to emit) and prescriptive or normative rules (such as laws or guidelines that are intended to direct the behavior of the listener). In the current analysis, the rule stating is primarily prescriptive in that the Mormon leadership offered directives to members that either implied or explicitly identified behaviors. The more such rules were followed, the more likely they were to be reiterated by the leadership to all members, and by individual members to each other and also to themselves. Reese (1989) noted that prescriptive rules are frequently incomplete "in that the consequence is not specified explicitly, or neither the discriminative stimulus nor the consequence is specified explicitly" (p. 31). In common with other religious books, the body of Mormon literature—including the *Doctrine and Covenants* and the *Journal of Discourses* (B. Young et al., 1854–1886/1961)—incorporate much content in which the discriminative or consequent stimuli are implied rather than stated explicitly. For example, prior to the first move west to the Salt Lake area, Brigham Young reported a revelation that provided members with such instructions as: "Thou shalt be diligent in preserving that which thou hast; that thou mayest be a wise steward; for it is the free gift of the Lord thy God, and thoun art his steward" (*Doctrine and Covenants,* 1880, 136, p. 30). In addition to "these general standards of conduct" (Hinckley, 1979, p. 96), there were more specific prescriptive rules, also the result of revelations, such as one specifying that during the journey to Salt Lake the wagons were to be drawn into a circle each night.

This study of Mormon settlement is more concerned with rule following, which is the behavior of listeners, than with rule stating, which is the behavior of speakers. Regarding rule following, Zettle and Hayes (1982, pp. 80–81) identified three classes, two of which—plys and tracks—are important to this analysis. Plys are rules that involve listener compliance with the stated rule and are reinforced by consequences that are socially mediated, whereas tracks are rules that involve listeners coming into contact with the specified relation such that this contact changes their behavior (Chase & Danforth, 1991, p. 209).

Why do rules control behavior? One answer relies on the distinction between plys and tracks. For a rule to be followed, it needs to be part of an effective contingency, a situation that typically arises because the outcome specified in the rule functions as a reinforcer. Pliance contingencies are evident when rules are stated by leaders and monitored. In the Mormon case, the speaker commands such respect that noncompliance is likely to have aversive consequences. However, as noted, many of the general guidelines and many of the specific rules stated by the Mormon leadership do not identify immediate or even delayed outcomes other than those that are socially mediated. There are two important reasons why rules as plys are followed notwithstanding that they do not identify immediate or delayed consequences. First, individual Mormons receive reinforcement for rule following because other members provide immediate consequences. Second, there is the certainty of eternal life after death, an implicitly understood and widely acknowledged delayed outcome of being a faithful Mormon. Taken together, these reasons suggest that compliance with rules is a powerful consideration in the Mormon context, in which much behavior is directed towards group goals.

Rules are also followed when they are tracks and the speaker does not mediate compliance. For tracks to be effective rules, there has to be an "ap-

parent correspondence between the rule and the way the world is arranged" (Zettle & Hayes, 1982, p. 81). Thus, rules as tracks are followed because the outcomes of rule following, such as increased prosperity resulting from cooperative behavior, strengthen that rule following. For example, irrigation, an agricultural strategy pioneered by the Mormons in the intermontane West, was enhanced by the community focus that was such a fundamental aspect of Mormon life. Successful irrigation of farmlands required cooperative management strategies for the planning, construction, and maintenance of dams, and required cooperative arrangements for the distribution of water to farmers. These irrigation schemes, present in all Mormon settlements, allowed Mormons both to cope successfully with periods of drought and to improve crop yields on a regular basis. In this way, following rules relating to a community focus and to cooperative behavior afforded necessary protection from physical environmental risks and resulted in increased prosperity for all group members.

As this discussion suggests, the distinction between tracks and plys is a helpful one for the purposes of this study. Rules are followed by Mormons because of fundamental pliance contingencies: Rule following is reinforced by other Mormons and by knowledge of the delayed outcome of eternal life, and rules are added to the larger body of Mormon literature. In addition, rules are followed as part of track contingencies: Cooperative behavior leads to prosperity and to protection from physical environmental hazards.

Also relevant in this account of rule following is understanding how rules function as establishing operations for both reinforcers and punishers. "In other words, the statement of the rule might establish certain stimuli as more effective behavioral consequences; that is, the statement of the rule might make those stimuli more rewarding or more aversive" (Malott, 1989, p. 291). Indeed, rules can be considered as establishing operations because they "establish the potency of certain elements of existing contingencies" (Andronis, 1991, p. 227); it is in this sense that rules are described as "function altering" (Schlinger & Blakely, 1987, p. 41). Although the concept of establishing operations continues to be debated by behavior analysts, as evidenced by the several and varied responses to Michael (1993), it is seen as important enough to be included in a number of textbooks (e.g., Martin & Pear, 1996).

Authority and Cooperation: Further Examples of Rule Governance

Two characteristic features of the Mormon church aid understanding of the role played by rule-governed behavior. First, priesthood authority governs the church. A series of revelations explain the creation and maintenance of a hierarchical administrative structure that is implemented through the involvement of members. Organization of the church is designed to benefit all those who participate, and is expected to involve all participants in the work of the church. To take specific actions or perform specific tasks, leaders call individual members. This is the important principle of individual service. Callings come, in the form of general requests or specific instructions, from church leaders who are regarded by members as inspired representatives of God. Mormon settlement of the intermontane West after 1847 was usually prompted by callings. Today, the church continues to function by means of both divine revelation and common consent. Authority in the church flows from the President, and members may support or not support decisions proposed by leaders.

Most researchers emphasize this centrally directed basis of Mormon behavior: "Two fundamental principles advocated by the Church were in a large measure responsible for the settlement. . . . The first of these was that church leaders were divinely called to lead, and the second was unquestioned

submission by those so called" (Leavitt, 1934, p. 30). Arrington (1958) stated, "The church's task . . . did not end with the conversion of individual souls. As the germ of the Kingdom of God, the church must gather God's people, settle them, organize them, and assist them in building an advanced social order" (p. 5). This thesis reflects an 1830 revelation that instructed the church "to bring to pass the gathering of mine elect; . . . they shall be gathered in unto one place upon the face of this land" (*Doctrine and Covenants*, 1880, 29, pp. 7–8). Non-Mormon observers in the 19th century recognized the role played by leaders, and Speth (1967) referred to two such assessments: First, Ferris, a secretary of Utah territory, noted in 1856 that "all their energies, stimulated by religious enthusiasm, have been measurably directed by a single will"; second, Stansbury, an Army captain, recognized that Mormon behavior "may be most clearly accounted for in the admirable discipline and ready obedience of a large body of industrious and intelligent men, and in the wise counsels of prudent and sagacious leaders, producing a oneness and concentration of action" (p. 57).

These antecedent conditions, the Mormon commitment to acceptance of authority, and the related emphasis on group rather than individual achievement, influenced settlers to formulate rules concerning the specific behavior being analyzed: the movement of Mormon settlers from one location to another as this behavior relates to the ambitions of church leaders. The rule is of the form: "Because I am a faithful Mormon, believing in the restoration of the church through the prophet Joseph Smith, I will heed calls issued by church leaders to move with my fellow Mormons." Charles Walker, called in 1862 to help colonize St. George in southern Utah, recorded in his diary:

> At night I went to a meeting in the Tabernacle of those that had been called. Here I learn'd a principle that I shant forget in awhile. It showed to me that obedeance was a great principle in Heaven and on earth. Well here I have worked for the last 7 years thro heat and cold, hunger and adverse circumstances, and at last have got me a home, a Lot with fruit trees just beginning to bear and look pretty. *Well I must leave it and do the will of my father in Heaven who over rules all for the good of them that love and fear him,* [italics added] and I pray God to give me Strength to accomplish that which is required of me in an acceptable manner before him. (Walker, 1969, p. 19)

A second characteristic feature of the church, which also aids understanding of the role played by rule-governed behavior, is that Mormons are a society of believers who practice cooperative effort and support for other members. The concept of community, evident in the favored pattern of village settlement and in the spatial organization of the church, was emphasized following an 1831 revelation which encouraged unity, cooperation, and mutual assistance: "I say unto you, be one; and if ye are not one, ye are not mine" (*Doctrine and Covenants*, 1880, 38, p. 27).

The ward, an ecclesiastical unit usually comprising 300 to 600 members, was the principal base for organizing cooperative activity in all areas of endeavor, including such basic tasks as building fences and digging irrigation ditches. The presence of small groups ensured that the monitoring and application of contingencies was not hindered (Guerin, 1998, p. 59). Families shared the difficulties of others and, in addition, were often called to leave established and comfortable surroundings to go into the wilderness and to begin anew the process of settling. Building the landscape was a cooperative task, and individuals who experienced difficulties knew that aid would always be forthcoming, substantially reducing the risk taken by each individual. Failures, such as crop losses or damage to buildings, and personal disasters, such as the loss of a loved one, were group rather than individual problems.

Church organization is intended to ensure the survival and growth of the

church and to benefit all those who are members.

> Their admirable system of combining labor, while each has his own property, in lands and tenements, and the proceeds of his industry, the skill in dividing off the lands, and conducting the irrigation canals to supply the want of rain, which rarely falls between April and October; the cheerful manner in which everyone applies himself industriously, but not laboriously; the complete reign of good neighborhood and quiet houses and fields, form themes of admiration for the stranger. (Stansbury, quoted in L. E. Young, 1924, pp. 162–164)

Again, the antecedent conditions of the Mormon commitment to acceptance of authority and the related emphasis on group rather than individual achievement resulted in Mormons formulating rules such as, "Because the need for individual members to act cooperatively with other members is one of the fundamental doctrines of the church, I will behave in accord with that doctrine." This admittedly rather general rule relates to many of the instances of cooperative behavior, and is to be understood in the context of the fact that the relationship between individual behavior and individual consequences is being mediated by the community. The following is one example of cooperative action. After John Lowe Butler and others began the new settlement of Spanish Fork City, a fire destroyed the possessions of one of the group. Butler recorded,

> Well I knew it was pretty hard to lose all they had almost, and so I thought that I would get up a subscription for them. I did so and raised over a hundred bushels of wheat for him. And the womin folks went to work and got them some clothes, and so they did not feel the loss like they would if it had not been done for them. (Hartley, 1993, p. 424)

Both these rules from church leaders and rules about cooperation are properly regarded as establishing operations. Establishing operations affect the reinforcing effectiveness of other events and the frequency of occurrence of behaviors that have had those other events as consequences. Accepting responsibilities determined by leaders and working for a common good combined to contribute to the remarkable growth of the church, both numerically and spatially, and to what might be described as a uniformity of individual behavior. Members of the Mormon church are members of a group, the continuation and success of which is more important than any personal achievement. This account of rule formation and rule following is in accord with the observation by Guerin (1998) that "individual religious behaviors are principally maintained by the many powerful benefits of participating in social groups rather than by any immediate or obvious consequences of the religious behaviors" (p. 53).

SETTLEMENT AND METACONTINGENCIES

For church leaders, a first goal in the West was to establish a distinct identity in the new landscape and once established—in their place—the church commenced an organized series of explorations and subsequent agricultural colonization of the surrounding valleys (Meinig, 1965). Rapid numerical growth combined with the 1850 creation of a Perpetual Emigration Fund to provide the people needed to establish new settlements and to allow the church to become a dominant force in the west. Between 1855 and 1887, about 85,000 Mormons journeyed to Utah with the financial and organizational support of the fund. Settlements were established throughout Utah, in Idaho, Wyoming, Colorado, New Mexico, Arizona, Nevada, California, and as far afield as Mexico and Canada.

Settlements were not isolated from each other or from the church headquarters in Salt Lake City. Settlement sites were usually selected by leaders, and the settlers were either called or volunteered to move to a new location. The landscape that evolved has a number of distinctive features, all intimately related to the religious identity. Speaking in 1874, President George Smith observed,

> The first thing, in locating a town, was to build a dam and make a water ditch; the next thing to build a schoolhouse, and these schoolhouses generally answered the purpose of meeting houses. You may pass through all the settlements from north to south, and you will find the history of them to be just about the same. (quoted in Church News, 1979, p. 2)

Towns were laid out in approximate accord with the City of Zion plan as detailed by Joseph Smith in 1833 following divine revelation; there was a regular grid pattern, square blocks, wide streets, half-acre lots that included backyard gardens, brick or stone construction, and central areas for church and educational buildings. Towns laid out along these lines both reflect and enhance the community focus. Arable agriculture was preferred over pastoral activities that necessarily involved greater movement and lower population densities. There were irrigation ditches, lombardy poplars, unpainted fences and barns, and hay derricks. Combined, these features serve to distinguish the landscape from surrounding areas and to impose a sense of unity on that landscape (Francaviglia, 1978).

It was a religious obligation to change the landscape; settling, building, and producing were religious duties and not simply a means to subsist. As already noted, leaders assumed responsibility for gathering, organizing, settling, and assisting members, and economic growth was actively encouraged, especially through the emphasis on both community and progress. Once in place, members worked together to use the local resource base. Individual initiative was never absent, but it was not to take precedence over the larger interests of the community. All members funded the activities of the church, especially missionary and building work, through tithing. "In short, he who wishes to go up to Zion, should start for the sole purpose of building up the Kingdom of God" (*Millennial Star,* February 4, 1854, p. 72). Arrington (1995) summarized the basic approach of Mormons during the colonization period:

> They must work together, just as they worshiped together; they must share with each other to build up the Kingdom of God—not as individuals but as a group; not by competition but by cooperation; not by individual aggrandizement but by community development; not by profit-seeking but by working selflessly to build the Kingdom. (p. 292)

The concept of metacontingencies of group survival and growth aids understanding of the doctrines and practices of the Mormon church. "The continuing existence of a practice depends on the effectiveness of the practice in producing outcomes that sustain the existence of permaclones through which the replicators operate" (Glenn, 1991, p. 64). Thus, strong leadership, a hierarchical structure, cooperative activity, the practice of polygamy, the creation of the Perpetual Emigration Fund, and missionary activities were selected, maintained, and, if necessary, changed in order to ensure group survival and growth. The remarkable expansion of settlement after the 1847 location in the Salt Lake Basin ensured that there were few changes to these strategies as they related to settlement, although there were several attempts at the creation of utopian settlements, known as the United Order, that were abandoned because of internal difficulties. More generally, the metacontingencies of group survival ensured that the basic leadership, hierarchical, and communal aspects of Mormonism remained essentially unchanged. Exceptions include the practice of polygamy that was discontinued in 1890 because of opposition from other Americans and from the U.S. government, and the Perpetual Emigration Fund that ceased to support the movement of new converts after 1887 because such support was no longer needed.

DELAYED CONSEQUENCES

There were delayed consequences that supported behaving in accord with the requests of leaders. The principle of economic self-sufficiency was established through revelations: "Let all thy garments be plain, and their beauty the

beauty of the work of thine own hands" (*Doctrine and Covenants*, 1880, 42, p. 40); and "contract no debts with the world" (*Doctrine and Covenants*, 1880, 64, p. 27). The principles stated in these revelations were applied throughout the colonization process, with settlers being asked to produce their own food and their own manufactured goods. As a result, settlement behavior, including village organization, achieved the delayed consequence of economic independence (Nelson, 1954). Other examples of delayed consequences include being a part of a religious and social community growing and flourishing in a previously desolate and empty environment, observing the effects of irrigation, and witnessing economic advances in various areas of endeavor. Again, the historical record confirms that these consequences were usual. The importance of such experiences is evident from Brigham Young's exhortation:

> There is great work for the saints to do. Progress, and improve upon, and make beautiful everything around you. Cultivate the earth and cultivate your minds. Build cities, adorn your habitations, make gardens, orchards, and vineyards, and render the earth so pleasant that when you look upon your labours you may do so with pleasure, and that angels may delight to come and visit your beautiful locations. (B. Young et al., 1854–1886/1961, 8, p. 83)

A related factor was the egalitarian character of the church, a doctrine that was formulated in an 1832 revelation: "If ye are not equal in earthly things, ye cannot be equal in obtaining heavenly things" (*Doctrine and Covenants*, 1880, 78, p. 6). This doctrine was reflected in the allotment of land and water to settlers and, as noted earlier, led to some ambitious and generally short-lived attempts to create completely new village societies.

Of particular importance to an understanding of Mormon settlement behavior was the belief that being a church member in mortal life is but one stage in a process of eternal human relationships. Cooperation and community on earth were to be followed by immortal beings living together forever in heaven. The fact that this consequence was to be delayed until after death does not diminish its effect on behavior. However, it is not the belief itself that is a delayed consequence, because belief is present at the time of the behavior. Rather, the description of the belief establishes the delayed outcome as a form of reinforcement for compliance with prescribed behavior and other outcomes as a form of punishment for noncompliance with prescribed behavior.

In 1853, Irene Hascall wrote from Salt Lake City to an aunt, "I must preach to you. Everything else seems of so little consequence. What is 70 or 80 years compared with eternity" (Hascall & Pomeroy, 1957, p. 352). Recognizing the role played by this delayed consequence is fundamental. All Mormon behavior, including such mundane tasks as planting crops or digging ditches, was an act of religious devotion. The principle of obedience is central: "It is abundantly evident from the whole tenor of the Scripture, that it is on the principle of obedience alone that man can obtain for himself the favor and blessings of heaven" (*Millennial Star*, August 11, 1866, p. 509). Leavitt (1934) noted that obedience by individuals was a response to their belief in the benefits of such behavior: "Though the President could preside with the hand of a virtual dictator, complete obedience and submission of his followers was brought about, not from fear or force, but by implicit trust and assurance of future self-benefit" (p. 30). Writing from Las Vegas in 1855, one settler noted, "We hope for better times ahead; and if we don't live to see it, maybe our children will" (quoted in Flake, 1974, p. 149). Regarding settlement in Rich county, Parson (1996) noted, "The feeling that God was indeed on their side and would intervene on their behalf gave the Mormon settlers added reason to persevere" (p. 183).

The decision to accept a call was not without problems, indicating the criti-

cal role played by the belief in immortal life, including the belief that behavior while on earth was an act of religious devotion. Before moving to St. George, Charles Walker (1969) noted in his diary,

> Everyone that owed me anything were trying to keep it from me. . . . many take the advantage of my circumstances in putting their price on my articles and on theirs but I am bound to go by the help of God.

Further,

> I left my home, friends, relatives, and acquaintances and started out to perform my mission; this was the hardest trial I ever had and had it not been for the gospel and those that were placed over me I should never moved a foot to go on such a trip, but then I came here not to do my own will but the will of those that are over me and I know it will all be right if I do right. (pp. 19–20)

MORE IMMEDIATE CONSEQUENCES

There were, of course, immediate contingencies related to both the statement of rules and to the following of rules. Some of these contingencies were social in nature and are examples of contingencies that support pliance. For example, when one settler discussed with another settler the reasons for accepting a calling, the other settler appreciated the logic of the acceptance given their shared commitment to the Mormon faith, thus reinforcing the decision. Indeed, Mormons were encouraged by their leaders to seek the advice of "one of our people" (*Deseret News,* October 16, 1878) when making important settlement decisions.

Other immediate contingencies supported engaging in the daily activities of functioning as a faithful Mormon. Helping a neighbor build a home or clear land for crops, cooperating with other group members to build a meeting house, and offering financial support to the church through the process of tithing were all examples of such regular activities. Possibly the most important consequence was the regular group expression of gratitude: "When the day's work was done, the people would all gather together and express their thankfulness for their crops" (Carter, 1943, p. 401).

Some of the consequences with respect to following a calling likely served as both immediate and delayed reinforcers for ongoing activities. Examples included being part of a religious and social community growing and flourishing in a previously desolate environment, observing the positive effects of irrigation, and witnessing economic advances in various areas of endeavor.

> The Mormon settlers had great faith, and a broad vision. They watched the wild berries and fruits on the hillside and mountains, and knew that if they watched closely and worked hard they would be able to gather plenty for their winter use. (Carter, 1943, p. 383)

Also, modeling of Mormon settlement activity likely influenced the behavior of new settlers. The relevance of rules favoring established behavior was evident to a new settler who was able to observe and imitate existing settlers who were experiencing the reinforcing consequences related to the sense of religious and social well-being and to economic prosperity.

Mormon settlers also avoided the aversive consequences of not complying with prescribed behavior. Accounts of settlement do not typically refer to aversive consequences because such accounts were usually written by faithful Mormons, but it seems probable that, once a commitment was made to the Mormon faith and to a local and socially cohesive group, then any departure from prescribed behavior would have aversive consequences. Notable among these would be a loss of cultural identity and a loss of group support in times of need. In this respect, much Mormon behavior that is beneficial for the group occurred because different behavior had aversive consequences.

This relation between the consequences for compliance and those for noncompliance did not, of course, always result in compliance. There is a debate in the literature concerning the

extent to which Mormons accepted church rules. A balanced analysis by Shipps (1987) suggested that

> During the pioneer period, the practicalities of the Mormon experience made universal suppression of dissident behavior and unconventional belief so difficult that, despite all the overblown stories of the refusal of LDS leaders to countenance dissent and notwithstanding all the fictionalized accounts of the terrible fate awaiting apostates, a surprising degree of multiformity was tolerated in the early years within the LDS church itself. (p. 346)

Certainly, not all Mormons complied with prescribed behavior.

Nor were all Mormons able to sustain their faith and share religious commitment with others. Some found the task of settling and building a new life to be essentially one of living to support a growing family rather than one of conquering the desert for God. John MacNeil, in letters written from Utah to relatives in Scotland, expressed concern with the characteristic Mormon integration of economics, politics, and religion. In a letter to his parents (who were Mormon converts) on March 6, 1874, John contrasted his Utah experience with earlier impressions of Mormonism prior to leaving Scotland:

> To Commence with, You See the best of Mormonism in the Old Country. The principles of Mormonism may be all right, I dont know, but the Amount of rascality that is practized by Men in Standing in the Church Leaves A Doubt in the Minds of rational thinking persons in regards to it. (Buchanan, 1988, p. 179)

In the same letter, John wrote,

> You have an Idea that Co Operation is a good thing, Well, It is where its honestly Conducted, but the big bugs kick the poor bugs Out with their few dollars as Soon as it proves a Success. Thats Financing here. (p. 181)

The decision not to comply with prescribed behavior is evident in the creation of numerous splinter groups. Prior to the death of Joseph Smith in 1844, nine groups broke away, and a number of others appeared during the succession crisis that followed his death. Only one of these, the Reorganized Church of Jesus Christ of Latter Day Saints, is of numerical significance today. The period of intermontane settlement in the second half of the 19th century witnessed very few schisms within the church.

The overall pattern of Mormon behavior, however, seems clear: "Great numbers of men and women proved capable of sustained loyalty" (Taylor, 1962, p. 105). It was usual for settlers to encourage others to join them. In an 1853 letter to her sister, Ursulia Hascall wrote, "You know not how much I want to see you in this valley and enjoy the society of the saints with me. It is truly the greatest happiness that can be enjoyed this side the veil" (Hascall & Pomeroy, 1957, p. 347). Immediate contingencies, both reinforcers and punishers, encouraged settlers to keep emitting accepted behavior until the reinforcing consequences specified by the rules, or implicitly understood, came into play.

CONCLUDING COMMENTS

Mormon settlement activity qualifies as a cultural practice or permaclone, a set of coordinated actions with respect to some common environment. Although the individuals in the Mormon group change over time, there is a continuity to the cultural practices of the group until those practices no longer achieve the desired outcome. The metacontingency is a set of antecedent conditions, behaviors (cultural practices), and consequences that make the continuation of Mormon landscape-making behavior probable. The complex situations analyzed in this paper require consideration of the concepts of permaclone and metacontingency, rule-governed behavior including pliance and tracking, and delayed consequences, because simpler concepts are insufficient, but the basic principles of the analysis are consistent with simpler behavior-analytic concepts. Rules function as discriminative stimuli or function-altering stimuli, and thus their function is derived from such basic concepts as reinforcement.

This study of Mormon settlement

suggests that behavior analysis provides an appropriate set of concepts and principles for the analysis of complex human behavior at a large scale. Antecedent conditions and consequences are distinguished, distinctions that are not acknowledged in other human geographic analyses. Mormon settlement behavior was in close accord with the contemporary social and economic circumstances and can be understood by reference to the behavior-analytic concept of rules, both because some consequences are not direct acting and because the social consequences of rule following are direct acting. The social consequences are the self-knowledge that one is behaving appropriately as a group member and the approval of both peers and church leaders.

Mormons opted to settle in difficult semi-arid environments at a time when more favorable environments were readily available. Referring to the settlement of St. George, Logue (1988) noted that "other American migrants traveled to what they believed were better places to make a living, while most of these Mormons had given up relatively comfortable circumstances to go to a place where they knew life would be hard" (p. 5). Further, Mormon settlement produced a relatively uniform landscape, with Meinig (1965) referring to the distinct "visible imprint on the land" (p. 193). The concepts employed in this behavior analysis have enabled these two unusual circumstances of Mormon settlement to be explained. First, metacontingencies of group survival and progress mean that there is a continuity to Mormon cultural practices, such as irrigation, through time. Second, rule-governed behavior, including both plys and tracks, involved the church leadership exercising control over individual members, and thus ensured similar strategies throughout the semi-arid environment in which they settled. Third, delayed consequences, such as economic self-sufficiency, supported behaving in accord with the requests of leaders. Given these conclusions, it is hoped that this analysis both suggests new avenues for behavior analysts to explore and prompts human geographers to reconsider the merits of objectivist philosophies.

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